UNITED STATES PATENT AND TRADEMARK OFFICE

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10/689,033	10/21/2003	Keven Yang	TAIW 487	4491

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _21 October 2003_.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-13_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-13_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _21 October 2003_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some *   c) ☐ None of:

        1. ☒ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____.

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5)

because they include the following reference character(s) not mentioned in the

description: Fig. 6, 310. Corrected drawing sheets in compliance with 37 CFR 1.121(d),

or amendment to the specification to add the reference character(s) in the description

in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid

abandonment of the application. Any amended replacement drawing sheet should

include all of the figures appearing on the immediate prior version of the sheet, even if

only one figure is being amended. Each drawing sheet submitted after the filing date of

an application must be labeled in the top margin as either "Replacement Sheet" or

"New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the

examiner, the applicant will be notified and informed of any required corrective action

in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Ma

et al. (Hereinafter "Ma": (US 6082619).

Regarding claim 1, Ma teaches a method for correcting skew images

comprising the steps of: (a) detecting a plurality of edge areas on an image, each of

the edge areas having an edge (column 4, lines 62-63); (b) calculating a plurality of

gradient angles of the edge areas to sum up weightings of the gradient angles (column

4, lines 64-67); and (c) rotating the image according to the gradient angle with the

highest weighting (column 15, lines 9-14 and 37-38); wherein the edge represents that

the maximum display difference in each of the edge areas is larger than a threshold

(column 12, lines 62-64, i.e. at least N pixels).

Regarding claim 8, Ma teaches the method of claim 1 further comprising a

confirming step performed after step (b), the confirming step confirming that the

gradient angles are in a predetermined range (column 7, lines 33-36).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented
> and the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma

as applied to claim 1 above, and further in view of Yamagata et al. (Hereinafter

"Yamagata": US 6226417).

Regarding claim 2, Ma teaches the method of claim 1 wherein the edge areas are determined by the steps of: confirming that the maximum display difference is larger than the threshold (column 12, lines 62-64 i.e. at least N pixels); and defining the blocks with the edges as the edge areas (column 12, lines 62-64).

Ma does not teach the limitations to claim 1 wherein the edge areas are determined by the steps of: grouping the image into a plurality of blocks, each of the blocks having N*N pixels, wherein N is an odd number except 1; grouping the pixels into a plurality of pixel groups according to a plurality of grouping angles; calculating the display differences between the adjacent pixel groups according to each of the grouping angles; and defining the blocks with the edges as the edge areas.

However Yamagata discloses the steps of: grouping the image into a plurality of blocks, each of the blocks having N*N pixels, wherein N is an odd number except 1 (Fig. 6, i.e. 3x3 blocks); grouping the pixels into a plurality of pixel groups according to a plurality of grouping angles (column 1, lines 61-67); calculating the display differences between the adjacent pixel groups according to each of the grouping angles (column 5, lines 61-66, i.e. pixels "on" versus number "off").

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teaching of Yamagata with the method of Ma, the motivation being to reduce processing time and memory requirements (Yamagata: column 1, lines 10-11).

Regarding claim 3, Ma in combination with Yamagata teaches the method of claim 2, wherein the blocks are grouped into the pixel groups by the grouping angles of 0.degree., 45.degree., 90.degree. or 135.degree. to a horizontal coordinate axis (Yamagata: Fig. 6).

Regarding claim 4, Ma in combination with Yamagata teaches the method of claim 2, wherein the display difference is the difference of display parameter sums between any two of the adjacent pixel groups (Yamagata: column 5, lines 63-64, i.e. 3 in same row "on" versus 3 in adjacent row "off").

Regarding claim 5, Ma in combination with Yamagata teaches the method of claim 2, wherein the display parameter sum is the sum of the display parameters of the pixels in each pixel group (Yamagata: column 5, lines 63-64, i.e. for pixels either "on" or "off" sum is the number of pixels in a given state).

6.   **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ma in combination with Yamagata as applied to claim 5 above, and further in view of Tretter (US 5901253).

Ma in combination with Yamagata teaches the method of claim 5.

Ma in combination with Yamagata does not teach the limitation to claim 5 wherein the display parameter is a luminance value or a chrominance value of each of the pixels.

However Tretter discloses an imaging processing system wherein the display difference is a luminance difference or a chrominance difference (column 9, lines 18-22).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented a luminance or chrominance difference, the motivation being to process color images.

7.   Claims 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma as applied to claim 1 above, and further in view of Tretter.

Regarding claim 7, Ma teaches the method of claim 1.

Ma does not teach the limitation to claim 1 wherein the display difference is a luminance difference or a chrominance difference.

However Tretter discloses an imaging processing system wherein the display difference is a luminance difference or a chrominance difference (column 9, lines 18-22).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented a luminance or chrominance difference, the motivation being to process color images.

Regarding claim 12, Ma teaches the method of claim 1.

Ma does not teach the limitation to claim 1 further comprising a step of adjusting the boundaries of the image after rotation.

However Tretter discloses a step of adjusting the boundaries of the image after rotation (column 6, lines 23-29, i.e. cropping or trimming).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have adjusted the boundaries of the image after rotation, the motivation being to eliminate unwanted image data (Tretter: column 6, lines 1-4).

8.   Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma as applied to claim 8 above, and further in view of Kapoor et al. (Hereinafter "Kapoor": Rajiv Kapoor, Deepak Bagai and T. S. Kamal, "Skew angle detection of a cursive handwritten Devanagari script character image", 2002, J. Indian Inst. Sci., May-Aug, 2002, Vol. 82, pp. 161-175).

Regarding claim 9, Ma teaches the method of claim 8.

Ma does not teach the limitation wherein the range is between -89.degree. to 89.degree..

However Kapoor discloses a skew detection method wherein the range is between -89.degree. to 89.degree. (page 164, step 3).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have accommodated a range of -89.degree. to 89.degree., the motivation being to detect maximum likely skew.

Regarding claim 10, Ma in combination with Kapoor teaches the method of claim 9, wherein the optimal range is between -45.degree. to 45.degree. (page 163, point (b)).

9.   **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ma as applied to claim 1 above, and further in view of Ueda et al. (Hereinafter "Ueda": US 6433896).

Ma teaches the method of claim 1.

Ma does not teach the limitation to claim 1 further comprising a step of outputting a caution message.

However Ueda discloses a step of outputting a caution message (column 17, line 40, i.e. warning message)

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a step of outputting a caution message, the motivation being to alert a user if no edge information can be found (Ueda: column 17, lines 38-39)

10.   **Claim 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ma as applied to claim 1 above, and further in view of Taylor et al. (Hereinafter "Taylor": US 6178270).

Ma teaches the method of claim 1.

Ma does not teach the limitation to claim 1 wherein the gradient angles are calculated by using Sobel operators.

However Taylor discloses the use of Sobel operators in determining gradient (i.e. skew) angles (column 4, lines 35-48).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have use Sobel operators, the motivation being to speed up the determination of edges under uncontrolled lighting conditions (Taylor: column 4, lines 32-34).

Conclusion

11.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Otsu et al. (US 6466693) discloses dividing an image into predetermined blocks and using Sobel edge detection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clifton G. Daley whose telephone number is 571-270-3144. The examiner can normally be reached on Monday - Friday 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexander Eisen can be reached on 571-272-7687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status

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more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

Customer Service Representative or access to the automated information system, call

800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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CGD
9/17/2007